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Tinted Lenses for Improving Comfort During Computer Use

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Description
Introduction: Users of yellow-tinted lenses and filters subjectively report some or all of the following benefits: increased brightness perception (≤40%; increased figure-ground ability; increased overall clarity of vision; increased patient comfort during eye exams; decreased discomfort glare.

Purpose: To investigate the mechanism of efficacy, if any, of Gunnar Optiks "digital eyewear". Zone Quick tear film, orbicularis EMG for squinting and blink rate, as well as symptoms, were all measured.

Disciplines
Optometry

Comments
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Vision Ergonomics Laboratory
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Tinted Lenses for Improving Comfort During Computer Use

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Introduction: Users of yellow-tinted lenses and filters subjectively report some or all of the following benefits:

- Increased brightness perception (≦40%)
- Increased figure-ground ability
- Increased overall clarity of vision
- Increased patient comfort during eye exams
- Decreased discomfort glare

Purpose: To investigate the mechanism of efficacy, if any, of Gunnar Optiks "digital eyewear". Zone Quick tear film, orbicularis EMG for squinting and blink rate, as well as symptoms, were all measured.

Subjects: 29 subjects (17 males, 12 females) between the ages of 22 and 62 (mean age: 31) completed the study.

Methods: Dry eye was tested by directing a fan toward the subject's face. Glare was caused by five 15W compact fluorescent lights (color temperature: 6500 K, 300W incandescent-equivalent). The Gunnar design spectacles were compared to flatter (+4D) BC Izod spectacles, a gray-tinted pair of spectacles, and clear (placebo) glasses, without tint or optical power, in similar frames.

The original Gunnar Optiks design and intended purpose:

Antireflective coating: Glare reduction

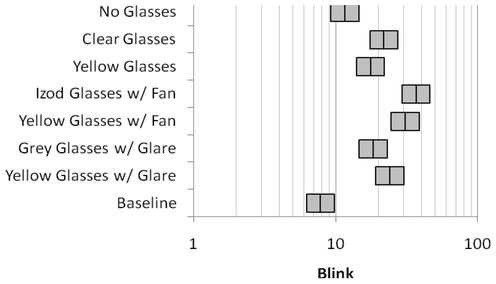
+8D lens base curve and highly-wrapped frame: "Microclimate" for dry eyes

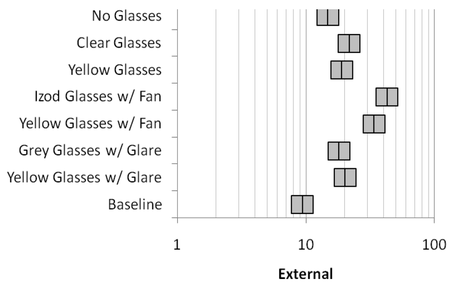
Yellow tint and UV protection: "Spectrum Contrast Tuning"

+0.50 D power (now +0.20 D): Magnification

Very slight base-in prism: Convergence relief

Results: Blink rate was significantly higher when under forced air conditions than when subjected to glare or control conditions ($F=10.28$, $p<0.001$). External symptoms, such as dry eye, were significantly higher when blink rate was higher ($F=11.9$, $p<0.001$). The Zone Quick tear film test, while 2 mm greater with the high base curve Gunnar design, was clinically but not statistically significant, and may have been due to reflex tearing.





Conclusions:

1. Subjectively, external symptoms related to dry eye were better with the Gunnar Optiks design spectacles than without.

2. Blink rate corresponded to external symptoms almost exactly, but was not better with the Gunnar Optiks design than without.

3. Questions remain concerning the efficacy of the yellow tint for relieving visual stress.

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